WHITEFORD, TAYLOR & PRESTON L.L.P.
444 Madison Avenue, Fourth Floor
New York, NY 10022
(914) 761-8400
klewis@wtplaw.com
Kenneth M. Lewis

WHITEFORD, TAYLOR & PRESTON L.L.P.
Seven Saint Paul Street, Suite 1500
Baltimore, MD 21202-1636
(410) 347-8700
stiller@wtplaw.com
khroblak@wtplaw.com
Steven E. Tiller
Kevin G. Hroblak

Attorneys for Plaintiff, Max A. Rady

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

MAX A. RADY, Plaintiff, v. THE BOSTON CONSULTING GROUP, INC. and De BEERS UK LIMITED, Defendants.	Case No.: 1:20-cv-02285 (ALC) Judge Andrew L. Carter, Jr.

PLAINTIFF MAX A. RADY'S OPPOSITION TO
MOTION TO DISMISS FILED BY De BEERS UK LIMITED

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Plaintiff, Max A. Rady ("Mr. Rady"), by and through his undersigned counsel, respectfully files this Opposition to the Motion to Dismiss filed by Defendant, De Beers UK Limited ("De Beers"), and in support thereof, states:

I. SUMMARY OF ARGUMENT

De Beers' Motion to Dismiss (the "Motion") represents not only a grave misunderstanding of Mr. Rady's Second Amended Complaint [ECF 30], but also a gross mischaracterization of the complex intricacies of the invention claimed in his patent - United States Patent No. 10,469,250 ("the '250 patent"). Specifically, De Beers, relying on *Alice Corp. Pty Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), erroneously asserts that the invention claimed in the '250 patent is directed to nothing more than the abstract idea of "collecting, processing and storing data to track physical items," and thus, constitutes patent-ineligible subject matter. Even if Mr. Rady's invention is directed to an abstract idea (it does not), De Beers further ignores the sophisticated combination of complex technologies required by the claims of the '250 patent, inaccurately concluding that the invention does not transform that abstract idea into patent-eligible subject matter.

De Beers' arguments wholly disregard the reality that the claims of the '250 patent are directed to, and incorporate, a combination of sophisticated technologies to construct, assign and preserve unique signatures (a/k/a "fingerprints") to physical items, including gemstones, in a novel and inventive manner. Through the use of blockchain technologies, distributed ledgers are then implemented on peer-to-peer networks to store these signatures securely using cryptography. Storage of this data on a distributed ledger is far more accurate and reliable than traditional storage mechanisms as it is not necessary to rely on a third party database to trace the authenticity of the item being tracked. This novel and functional technique for analyzing a physical item,

creating and storing a unique signature for that item, and tracking and confirming its authenticity and provenance through an entire distribution chain is in no way abstract.[1]

Significantly, even if the Court were to hold that the claims of the '250 patent are directed to an abstract idea, De Beers' arguments still fail to address the fact that the combination of elements contained in the claims define far more than a routine activity, but rather are directed to a highly inventive process that solves long felt problems in a variety of industries.[2] Accordingly, the '250 patent applies an inventive concept that converts an abstract idea into patent-eligible subject matter. For this additional reason, De Beers' Motion should be denied.

II. BACKGROUND

A. The Counterfeiting Problem

According to a May 2019 article by co-defendant Boston Consulting Group, Inc. ("BCG") titled "Stamping Out Counterfeit Goods With Blocked Chain and IoT," counterfeiting is a widespread economic problem that results in billions of dollars in lost business revenue each year, exposing individuals and corporations to heightened health, safety and cybersecurity risks from fraudulent materials and defective parts. ECF 33 at ¶ 1. For example, within the pharmaceutical industry, between $75 billion and $200 billion in counterfeit pharmaceuticals are sold each year, while, in the electronics' industry, counterfeit parts cost component manufacturers approximately $100 billion annually. *Id*.

The gemstone industry has long struggled with keeping counterfeits out of the market and providing greater transparency of the provenance and sourcing of each particular stone. *Id*. at ¶ 3. The benefits to the industry of a quick, reliable and transparent application to confirm provenance

[1] *See, e.g., Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1349 (Fed. Cir. 2017).

[2] *See, e.g., In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016).

and sourcing would be significant. *Id.* For example, studies have shown that customers are willing to pay an increased amount for a stone that is guaranteed to be both legitimate and ethically sourced.[3] *Id.* Additionally, the lack of a reliable way to identify and authenticate gemstones at scale allows fraudulent actors to use the same stone as collateral for multiple transactions. *Id.*

Prior to Mr. Rady's invention, the gemstone industry, as well as many others, had unsuccessfully sought to develop a system for determining or defining unique signatures (*i.e.*, individual "signatures" or "fingerprints") of individual physical items each having unique, random physical characteristics and properties and recording those signatures and any transactions involving those items on an infallible ledger. Mr. Rady's inventions accomplished these goals.[4]

[3] The diamond industry has long struggled to keep so-called blood diamonds (also known as conflict diamonds) – diamonds mined in a war zone or by slaves and sold to finance an insurgency, an invading army's war efforts, or a warlord's illegal activities – out of the market. Indeed, De Beers markets TRACR, one of the technologies developed and utilized by De Beers and BCG that Mr. Rady alleges infringes his '250 patent, as underpinning "confidence in diamonds and the diamond industry by ensuring that all registered diamonds are conflict-free and natural…." ECF 33 at ¶ 63. Gemfair, another infringing technology developed and utilized by the defendants, is promoted as a "dedicated technology to record … production at mine sites that meet demonstrable ethical standards, with the aim of purchasing rough diamonds from approved locations … to improve working conditions and livelihoods for those working in the sector." *Id.* at ¶ 64.

[4] BCG was retained by DeBeers to develop a method to identify and ensure the provenance of gemstones. *Id.* at ¶ 11. When, despite considerable efforts, BCG was unable to develop this solution for DeBeers, BCG asked Mr. Rady for assistance, knowing that the application leading to the issuance of the '250 patent was pending. *Id.* at ¶ 12. Only after BCG repeatedly assured him that his invention and related trade secrets would be held in strict confidence, Mr. Rady disclosed his then unpublished patent application and trade secrets to BCG. *Id.* at ¶ 13. Shortly thereafter, BCG publicized its development of TRACR, leading to Mr. Rady's suspicions that BCG had simply stolen his invention. *Id.* at ¶ 47-57. An anonymous whistleblower later confirmed to Mr. Rady that his invention had, indeed, been stolen by BCG to develop TRACR. *Id.* at ¶ 74-77.

According to BCG,

> TRACR provides end-to-end diamond tracing from the mine to the point of sale. *It was created to address long-standing issues and provide benefits within the diamond industry* – authenticating a diamond's natural creation, provenance, and ethical sourcing.

Id. at ¶ 42 n. 1 (emphasis added). In a media release, De Beers also endorsed the unprecedented value the '250 patent offers to the gemstone industry, declaring that: "[t]he Tracr project team has demonstrated that it can successfully track a diamond through the value chain, providing asset-traceability assurance in a way that was not possible before. *This is a significant breakthrough*." *Id*. at ¶ 66 (emphasis added).

III. APPLICABLE STANDARD

A. Motion to Dismiss

A motion to dismiss for failure to state a claim should not be granted unless it appears certain that the plaintiff can prove no set of facts that would support his claim and entitle him to relief. "The purpose of Rule 12(b)(6) is to test, in a streamlined fashion, the formal sufficiency of the plaintiff's statement of a claim for relief without resolving a contest regarding its substantive merits. The Rule thus assesses the legal feasibility of the complaint, but does not weigh the evidence that might be offered to support it." *Glob. Network Commc'ns, Inc. v. City of New York*, 458 F.3d 150, 155 (2d Cir. 2006). In considering a motion to dismiss, a court must accept as true all well-pleaded allegations and should view the complaint in a light most favorable to the plaintiff. *Lynch v. City of New York*, 952 F.3d 67, 74–75 (2d Cir. 2020).

As the Supreme Court has cautioned, "[w]hen a federal court reviews the sufficiency of a complaint, before the reception of any evidence …, its task is necessarily a limited one. The issue is not whether a plaintiff will ultimately prevail but whether the claimant is entitled to offer evidence to support the claims." *Scheuer v. Rhodes*, 416 U.S. 232, 236 (1974), *abrogated on*

other grounds by, Harlow v. Fitzgerald, 457 U.S. 800 (1982). A complaint will survive a motion to dismiss if it "states a plausible claim for relief" that "permit[s] the court to infer more than the mere possibility of misconduct" based upon "its judicial experience and common sense." *Ashcroft v. Iqbal*, 129 S. Ct. 1937, 1950 (2009) (quoting *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 556 (2007)).

B. Patent Validity

While a court may consider patent eligibility under Rule 12(b)(6), the court may only find that a patent fails to claim patent-eligible subject matter "when there [are] no factual allegations that, taken as true, prevent resolving the eligibility question as a matter of law." *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1125 (Fed. Cir. 2018).

> If there are claim construction disputes at the Rule 12(b)(6) stage, [the Federal Circuit has] held that either the court must proceed by adopting the non-moving party's constructions, ... or the court must resolve the disputes to whatever extent is needed to conduct the § 101 analysis, which may well be less than a full, formal claim construction.

Id. (internal citations omitted).

Under the U.S. Patent Act, all patents are "presumed valid," and "[e]ach claim of a patent (whether in independent, dependent, or multiple dependent form) [is] presumed valid independently of the validity of other claims." 35 U.S.C. § 282(a). The burden of establishing invalidity of a patent under § 101 is clear and convincing evidence. *See Berkheimer v. HP Inc*., 881 F.3d 1360, 1368 (Fed. Cir. 2018), *cert. denied*, 140 S. Ct. 911, 205 L. Ed. 2d 454 (2020) ("The question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact. Any fact, such as this one, that is pertinent to the invalidity conclusion must be proven by clear and convincing evidence.") (citing *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 95 (2011)). Furthermore,

"[w]hether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination." *Berkheimer*, 881 F.3d at 1369. The court also outlined that "[l]ike indefiniteness, enablement, or obviousness, whether a claim recites patent eligible subject matter is a question of law which may contain underlying facts." *Id*. at 1368 (citing *Akzo Nobel Coatings, Inc. v. Dow Chem. Co*., 811 F.3d 1334, 1343 (Fed. Cir. 2016). Therefore, while the second step of the *Alice* two-pronged test is a question of law, there are underlying factual determinations that may guide the legal determination. *Innovation Scis., LLC v. Amazon.com, Inc*., 778 F. App'x 859, 864 (Fed. Cir. 2019) (citing *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018)).

C. USPTO Guidelines

The application leading to issuance of the '250 patent was filed on February 28, 2019, issuing on November 5, 2019. Beginning as early as December, 2014, the United States Patent and Trademark Office ("USPTO") issued guidelines advising examiners how to analyze patent applications in the wake of the Supreme Court's *Alice* decision. These guidelines have been revised and updated on a regular basis since that time, and patent examiners are required to apply these guidelines as part of their examination of every patent application. *See* 35 U.S.C. § 131; *See also* Manual of Patent Examination Procedure, Chp. 701 (R-10.2019). As such, these guidelines were undoubtedly applied by the examiner examining the application that led to issuance of the '250 patent.

IV. ARGUMENT

A. Patent Eligibility Under 35 U.S.C. § 101.

Section 101 of the United States Patent Act provides the groundwork for determining whether an invention constitutes patent-eligible subject matter:

> Whoever invents or discovers any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101. The Supreme Court has held that these wide-ranging categories are not, however, without exception. "The Court has long held that this provision contains an important implicit exception. '[L]aws of nature, natural phenomena, and abstract ideas' are not patentable." *Mayo Collaborative Servs. v. Prometheus Labs.,* Inc., 566 U.S. 66, 70 (2012) (quoting *Diamond v. Diehr*, 450 U.S. 175, 185 (1981)). Instead, these concepts are considered "basic tools of scientific and technological work" that sit outside the province of patentable subject matter. *Mayo*, 566 U.S. at 71 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

And yet, in an effort not to completely cripple the purpose of patents - to advance creation and innovation - the Supreme Court has acknowledged that "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas." *Id.* Therefore, patent protection must walk the line between "incentives that lead to creation, invention, and discovery" and "imped[iments] [to] the flow of information that might permit, indeed spur, invention." *Id.* at 92. The USPTO accounts for these factors in issuing patents, like the '250 patent, post-*Alice*.

B. The *Alice* Standard

In the landmark case, *Alice Corp. Pty Ltd. v. CLS Bank Int'l,* the Supreme Court considered whether patent claims relating to an alleged invention that mitigated risk in financial transactions through the use of a computer system as a third-party intermediary simply claimed an abstract idea prohibited by § 101. *Alice*, 134 U.S. at 2355. Particularly, the intermediary computer system would "create[] a 'shadow' credit and debit records (*i.e.*, account ledgers) that mirror the balances in the parties' real-world accounts at "exchange institutions" (*e.g.*, banks);" "update[] the

shadow records in real time as transactions are entered," and "instruct[] the relevant financial institutions to carry out the 'permitted' transactions in accordance with the updated shadow records…." *Alice*, 134 S. Ct. at 2352. Citing *Mayo*, the Court elaborated that "in applying the § 101 exception, [a court] must distinguish between patents that claim the 'buildin[g] block[s]' of human ingenuity and those that integrate the building blocks into something more, thereby transform[ing] them into a patent-eligible invention." *Alice*, 134 S. Ct. at 2354.

In finding that the claims at issue were directed to mere abstract ideas founded on a "fundamental economic practice[,]" the Court reaffirmed *Mayo's* two-part framework and expanded on the standard to distinguish between patent-eligible subject matter and patent claims that impermissibly claim abstract ideas. *Alice*, 134 S. Ct. at 2355-56. Pursuant to step one of this framework, a court must first determine "whether the claims at issue are directed to a patent-ineligible concept." *Id*. at 2355. If the claims do not merely claim an abstract idea or natural phenomena, then the analysis is over, and the patent is valid. Only if the claims are found to claim a mere abstract idea or natural phenomena, must the court ask, "[w]hat else is there in the claims before us?" *Id*. To answer that question, the court must "consider the elements of each claim both individually and as an ordered combination to determine whether the additional elements transform the nature of the claim into a patent-eligible application." *Id*. The Court explained that step two encompasses "a search for an 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'" *Id*. (quoting *Mayo*, 132 S. Ct. at 1294).

The petitioner in *Alice* argued that "the abstract-ideas category [was] confined to preexisting, fundamental truth[s] that exis[t] in principle apart from any human action." *Id*. at

2356. The Court, however, rejected this argument because it had previously held in *Bilski v. Kappos* that "the basic concept of hedging, or protecting against risk," was an "unpatentable abstract idea," and actually a "fundamental economic practice long prevalent in our system of commerce and taught in any introductory finance class." *Bilski v. Kappos,* 130 S. Ct. 3218, 3222, 3231 (2010). In this regard, the Court held:

> [W]e need not labor to delimit the precise contours of the "abstract ideas" category in this case. It is enough to recognize that there is no meaningful distinction between the concept of risk hedging in *Bilski* and the concept of intermediated settlement at issue here. Both are squarely within the realm of "abstract ideas" as we have used that term.

Id. at 2357.

Continuing its assessment, the Supreme Court next determined that the claims did not incorporate an inventive concept, but rather, "merely require[d] generic computer implementation, fail[ing] to transform that abstract idea into a patent-eligible invention." *Id*. In considering if "the claims [] do more than simply instruct the practitioner to implement the abstract idea of intermediated settlement on a generic computer[,]" the Court flatly held, "[t]hey do not." *Id*. at 2359. The Court found that the functions implemented by the computer were "[p]urely conventional," declaring that "[t]he method claims do not, for example, purport to improve the functioning of the computer itself;" "[n]or do they effect an improvement in any other technology or technical field." *Id.* "Instead, the claims at issue amount to 'nothing significantly more' than an instruction to apply the abstract idea of intermediated settlement using some unspecified, generic computer." *Id*. In affirming the Federal Circuit, the Court held that "the claims at issue are drawn to the abstract idea of intermediated settlement, and that merely requiring generic computer implementation fails to transform that abstract idea into a patent-eligible invention[,]"and was therefore ineligible under § 101. *Alice*, 134 S. Ct. at 2352.

In further interpreting step one of the *Alice* test, the Federal Circuit in *Enfish, LLC v. Microsoft Corp.* held that "the 'directed to' inquiry applies a stage-one filter to claims, considered in light of the specification, based on whether 'their character as a whole is directed to excluded subject matter.'" *Enfish, LLC v. Microsoft Corp*., 822 F.3d 1327, 1335 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc*., 790 F.3d 1343, 1346 (Fed. Cir. 2015)). The Enfish court cautioned of the fine distinction between evaluating a claim's "character as a whole" and "describing the claims at such a high level of abstraction and untethered from the language of the claims [so that it] all but ensures that the exception to § 101 swallow the rule." *Id*.

If the claims are determined not to be directed to an abstract idea, then the Court's analysis must cease, as the patent is directed toward patent eligible subject matter. *See Ancora Techs., Inc. v. HTC Am., Inc.*, 908 F.3d 1343, 1349 (Fed. Cir. 2018). If, however, the claims are directed to an abstract idea, the Court then considers *Alice* step two. *Data Engine Technologies LLC v. Google LLC*, 906 F.3d 999, 1007 (Fed. Cir. 2018). While the inventive concept "must be significantly more than the abstract idea itself … and cannot simply be an instruction to implement or apply the abstract idea on a computer," *BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*¸827 F.3d 1341, 1349 (Fed. Cir. 2016), it most certainly can include an "inventive set of components or methods," "inventive programming," or an innovative method in "how the desired result is achieved." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016). Moreover, the exploration of an inventive concept are waters in which the Court must tread most judiciously, "scrutiniz[ing] the claim elements more microscopically" in step two than they would in step one. *Elec. Power Grp.*, 830 F.3d at 1354.

C. The Invention Claimed in the '250 Patent

Notwithstanding De Beers' effort to simplify Mr. Rady's invention to the mere implementation of the abstract idea of "collecting, processing and storing data," Mr. Rady's invention is a highly complex system that relies on a combination of sophisticated technologies, employing spectral imaging and 3D scanning to identify a one-of-a-kind "fingerprint" for each separate physical item (in this case, diamonds or other gemstones). '250 patent at 1:54-67; *see also* 19:15-51 (Claim 1).[5] This fingerprint is applicable to the diamond no matter how many times it is polished, cleaned, cut, or otherwise manipulated or altered, providing for a foolproof mechanism to guarantee the provenance of each stone through the entire distribution chain from mine to customer.[6] Mr. Rady's invention, however, does not stop there.

Mr. Rady's invention then records each transaction involving a registered diamond on a blockchain. A blockchain is a growing list of records, called blocks, linked using cryptography. '250 patent at 1:1-3. Each block contains a cryptographic hash, a timestamp, and transaction data of a previous block. By design, a blockchain is resistant to modification of the data contained on it as it is an open, distributed ledger that can record transactions between parties efficiently and in

[5] References to the '250 patent include column numbers followed by line numbers.

[6] Like fingerprints, no two diamonds are exactly alike. All have imperfections, flaws, variations, defects, geometric irregularities, occlusions, anomalies, *etc*. that distinguish one diamond from another. Mr. Rady's invention requires a number of spectral analysis and other devices to identify all of these imperfections and map their geometric relationship to one another to create a unique signature, or fingerprint, for each diamond. '250 patent at 19:15-51 (Claim 1); 20:51-21:9 (Claim 12); and 22:6-54 (Claim 22). No matter how many times that diamond is polished or cut, these imperfections will remain in the same geometric relationship to each other, thus allowing the diamond, or smaller diamonds cut from the original diamond, to be authenticated through comparison to the original fingerprint. This remains true for anything that has small-scale imperfections or anomalies, such as paintings having variations in the elevation of the paint, strokes of the brush, pigmentation attributes, canvas elements such as degradation, stains, and textual qualities from production, and/or time-attributed affects that simply cannot be reproduced. '250 patent at 3:54-5:24. Electronic components, pharmaceutical products, and automobile components are also examples of the many other items that can be "fingerprinted" in this manner.

a verifiable and permanent way. *Id*. at 7:32-65. The blockchain is managed by a peer-to-peer network collectively adhering to a specific protocol for inter-node communication and validating new blocks. *Id*. at 10:48-11:9. Once recorded, the data in any given block cannot be altered retroactively without alteration of all subsequent blocks, which requires consensus of the network majority. Blockchain records are therefore secure and infallible to hacks or alteration. As such, Mr. Rady's invention is not the mere implementation of an abstract idea as De Beers argues, but rather, a unique and inventive system that utilizes a number of spectral imaging and 3D scanning components, as well as a complex peer-to-peer network, capable of tracking the authenticity, source, and provenance of any physical item having unique random properties. *Id*. at 4:7-5:44; 19:15-51 (Claim 1); 20:51-21:9 (Claim 12); and 22:6-54 (Claim 22).

Claim 1 is representative of the complexity of Mr. Rady's invention:

> A network node comprising:
>
> one or more processing devices;
>
> a storage device, coupled to the one or more processing devices and storing instructions for execution by at least some of the one or more processing devices;
>
> a communication subsystem, coupled to the one or more processing devices, to communicate with at one or more other nodes of a peer-to-peer network; and
>
> item analysis components coupled to the one or more processing devices, the item analysis components comprising at least one imaging device configured to determine spectral analysis data and 3D scan data from measurements generate by the item analysis components;
>
> wherein the one or more processing devices operate to configure the network node to;
>
> analyze an instance of a physical item using the item analysis components to determine a unique signature for the instance, unique signature determined using 3D spatial mapping to define the unique signature from the spectral analysis data and 3D scan data generated by the item analysis components for the physical item;

> determine, using the unique signature, whether the instance of the physical item is previously recorded to a blocked chain maintained by the peer to peer network to provide item tracking and authentication services, comparing the unique signature generated by the network node to previously recorded unique signatures using 3D spatial analysis techniques, rotating in virtual space features of the physical item defined in the unique signature to determine a match with features defined in the previously recorded unique signatures; and
>
> record the instance of the physical item to the block chain in response to the determining whether the instance is previously recorded.

Id. at 19:15-51. In short, the patent claims an intricate combination of computers and 3D spatial identification and spectral analysis components that interact to generate a unique fingerprint for each item being analyzed.

The patent's specification describes how the one or more processing devices operate, not just to collect, process, and store data as De Beers argues, but to configure the network to:

> Analyze [a diamond] using item analysis components to determine a unique signature for the [diamond], the unique signature determined using the analysis data for the [diamond and then determining], using the unique signature, whether the [diamond's signature has been] previously recorded to a blockchain maintained by the peer-to-peer network to provide [diamond] tracking and authentication services ….

Id. at 1:44-51. The patent goes on to clarify that the item analysis components may include:

> [1] A spectral imager to assess the spectral hypercube data of the [diamond], identifying irregularities in composition of the [diamond], notably the radiometric measurements at various spatial frequencies, [2] a light source (*e.g*. Xenon based) to provide broad spectrum illumination on the physical item; [3] a range scanner (*e.g*. laser based) to assess the 3D spatial data of the [physical item]; a calibration target to determine a geometric relationship between a range scanner and the imager; [4] an HD photography camera; [5] a scale to determine a mass of the physical item; and [6] a mechanism of movement (*e.g*. a moveable platter, platform or gantry) to move the [diamond] and assessment devices … to allow a 360 degree assessment of the [diamond].

Id. at 1:55-67. The '250 patent also describes use of "a location determination device configured to receive signals via the communication subsystem with which to determine a position of the network node." *Id*. at 2:25-28.

Thus, the invention does not simply utilize computers to collect, process, and store data. Rather, it combines computers with as many as seven other hardware and software components to create a novel and inventive system that solves a long-felt problem confronting many industries.

As an example of the practical application of the invention, the patent expressly describes use of this system to track the provenance of diamonds. The system determines the unique imperfections and other properties of each diamond to define a unique signature by 3D scanning, spectral analysis, and other measuring devices, which is then recorded on the blockchain. *Id*. at 3:60-4:3.[7] Once the diamond's fingerprint has been recorded on the blockchain, the diamond can be processed, *e.g.*, polished, cleaned, cut into multiple stones and/or a particular shape, or otherwise manipulated for a particular jeweler or customer. *Id*. at 4:30-32. The diamond, or any portion of the diamond resulting from cutting, can then be inserted into a "box/device" to record the new mass and geometry, and to take photographic images with 3D spatial awareness relative to its 3-dimensional geometry. *Id*. at 4:29-37. The diamond is then reoriented in virtual space to align two of the imperfections (and their 3D spatial and spectral data) with the previous blockchain entry. *Id*. at 4:38-43. Once completed, the diamond is simply rotated along its axis to confirm that all the original imperfections sufficiently match the original signature. *Id*. at 4:43-45. If the imperfections match, then the diamond has been authenticated and the transaction is validated. If the imperfections do not match the previously recorded signature, then the diamond is not authenticated and the transaction is rejected. *Id*. at 4:51-54.

[7] When a diamond is mined, it is placed in the "box/device" comprising: (i) a scale to record the mass of the diamond; (ii) a 3D/LIDAR (light detection and ranging) scanner to capture the geometry of the diamond; (iii) a high resolution camera which can quickly take high resolution pictures of the diamond from any angle; and (iv) a spectral imaging camera. *Id*. at 4:5-14. The mass, geometry, 3D space awareness photos, and spectral data is then encrypted and logged onto the blockchain along with the unique signature. *Id*. at 4:24-28.

Additionally, because each transaction (*e.g.*, polishing, cleaning, or cutting) is recorded to the blockchain which is made up of dozens, hundreds, or even thousands of nodes, manipulation of the ledger is impossible as a majority of the many nodes would have to be compromised and altered in the exact same manner in order for any transaction to be authenticated.[8] As such a diamond (or any other physical item having imperfections, flaws, or variances that lead to unique 3D spectral properties) may be tracked and authenticated with certainty and integrity.

i. Mr. Rady's Claims Satisfy Step One of the *Alice* Two-Step Inquiry.

In the first step of the *Alice* analysis, the Court should consider the "focus" of the claims and their "character as a whole," as part of the patent's written description, "as it informs [an] understanding of the claims." *See CardioNet, LLC v. InfoBionic, Inc.*, 955 F.3d 1358, 1368 (Fed. Cir. 2020) (internal quotations omitted). This comprehensive evaluation of the claims "is helpful in illuminating what a claim is 'directed to'" and provides invaluable perspective as to the purpose of the claims and whether they are, in fact, merely directed to an abstract idea. *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1346 (Fed. Cir. 2019).

Contrary to De Beers' assertions that Mr. Rady's invention is merely directed to patent-ineligible subject matter, there exists an abundance of cases where patent claims were determined to claim patent-eligible subject matter in similar instances. *See e.g. Finjan, Inc. v. Blue Coat*

[8] The '250 Patent identifies three types of nodes: (1) miners - which are the nodes that assess the asset; (2) witnesses – which may be other miner nodes within short range communication or nodes which provide all the same functionality as a miner minus the asset assessment, to improve security and confidence in location of the miner, and (3) full nodes which are not miners or witnesses, that help the network be more secure. Full nodes, which are not field deployed, are network nodes and do not conduct asset or location assessment, but instead verify every block on the blockchain, its validity, its correctness and the transaction of assets if any transaction exist. Full nodes need to be geographically disbursed and sufficiently capable of proving their identity integrity, hardware component integrity, source code integrity, track every block and ensure its validity, every transaction and ensure its validity, as well as ensure that consensus rules associated with the asset class in question. *Id*. 6:4-25.

Systems, Inc., 879 F.3d 1299, 1305 (Fed. Cir. 2018) (claims directed to "behavior-based virus scanning" were not abstract*); McRO, Inc. v. Bandai Namco Games Am. Inc*., 837 F.3d 1299, 1314 (Fed. Cir. 2016) (patents that automated a preexisting method for 3-D facial expression animation were not directed to abstract ideas); *Core Wireless Licensing*, 880 F.3d at 1356 (patents disclosing improved display interfaces, particularly for electronic devices with small screens like mobile telephones directed to patent eligible subject matter); *Enfish*, 822 F.3d at 1336 (claims directed to a self-referential table for a computer database were not abstract); *Data Engine Techs. LLC v. Google LLC*, 906 F.3d 999, 1002 (Fed. Cir. 2018) ("patents claiming systems and methods for making complex electronic spreadsheets more accessible were not abstract, as they were directed to "a specific method for navigating through … electronic spreadsheets[,]"); *Ancora Techs*, 908 F.3d at 1349 ("[p]atent describing and claiming methods of limiting a computer's running of software not authorized for that computer to run … advance[d] [] a concrete assignment of specified functions among a computer's components …" and was therefore not an abstract idea.).

Courts have made clear that inventions that employ specialized hardware shall survive the first step of *Alice*. For example, in *Thales Visionix Inc.*, the patent at issue concerned an "inertial tracking system for tracking the motion of an object relative to a moving reference frame. Inertial sensors, such as accelerometers and gyroscopes, measure the specific forces associated with changes in a sensor's position and orientation relative to a known starting position." *Thales Visionix Inc.*, 850 F.3d at 1344. The court held that these claims were "directed to systems and methods that use inertial sensors in a non-conventional manner to reduce errors in measuring the relative position and orientation of a moving object on a moving reference frame." *Thales Visionix Inc*, 850 F.3d at 1348-49.

The invention claimed in the '250 patent is quite similar in that it employs a host of specialized "sensors," – spectral imager, range scanner, HD camera, and a scale – combines those devices with other components, including a broad spectrum illumination based light source (*e.g.*, Xenon), a mechanism for movement, and a calibration target, to determine a diamond's unique signature which is then stored on a blockchain made up of many, many nodes for comparison to other blocks on the chain. '250 patent at 4:7-14; 8:44-45; 8:52-53. This is not simply the collecting, storing and processing data on a general purpose computer as De Beers suggests, but rather, a sophisticated and inventive combination of sensors and other devices that operate along with computers to meet a long-felt need in a number of industries.

In *Visual Memory LLC v. NVIDIA Corp.*, the patent's claims were directed to an enhanced memory system that "focus[ed] on ... the use of programmable operational characteristics that are configurable based on the type of processor." *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1259-60 (Fed. Cir. 2017). Distinguishing the patent at issue from an abstract idea where computers are used as merely a tool to store and process data, the court held that the invention was not simply directed to an abstract idea, given that "the memory system … permit[ted] different types of processors to be installed with the subject memory system without significantly compromising their individual performance." *Visual Memory*, 867 F.3d at 1259 (internal quotations omitted).

Furthermore, the Eastern District of New York has held that "developments in computer-related technology in which the focus of the claims is on solutions 'necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks' ... are not directed to an abstract idea." *Crypto Research, LLC v. Assa Abloy, Inc.*, 236 F.Supp.3d 671, 681 (E.D.N.Y. 2017) (quoting *DDR Holdings, LLC v. Hotels.com*, 773 F.3d 1245,

1255 (Fed. Cir. 2014)). In *DDR Holdings*, one of the first cases applying the *Alice* framework, the Federal Circuit upheld the district court's denial of summary judgment, finding that an e-commerce system and method that provided hosts with transparent, context sensitive-ecommerce supported pages was patent-eligible subject matter. *DDR Holdings*, 773 F.3d at 1245. Holding that the patent's use of a computer "do[es] not merely recite the performance of some business practice known from the pre-internet world," the court outlined that the patent in *DDR Holdings* defined a process, predicated on computer technology, for solving an issue that specifically arises in the arena of computer technology. *Id*. at 1257.

The Federal Circuit has made clear that if a patent claim seeks to make "improvements to computer functionality itself," the patent would not be in violation of § 101. *Enfish*, 822 F.3d at 1336. The unanimous panel in *Enfish* held that a patent covering software that included a self-referential table for a computer database was not just the abstract idea of "storing, organizing and retrieving memory in a logical table," but that it performed differently than a conventional database, and enhanced flexibility, generated faster search times, and required less memory. *Enfish*, 822 F.3d at 1337. In reversing the lower court's decision granting summary judgment, the court concluded that the self-referential table was "a specific type of data structure designed to improve the way a computer stores and retrieves data in memory," and was therefore not an abstract idea. *Enfish*, 822 F.3d at 1229.

The issue of improving computer functionality was further discussed in *Crypto Research*, where the district court addressed whether the defendants' characterization of the patents-in-suit as claims that only (1) stored values, (2) computed additional values and data, and (3) stored a new value were directed to the abstract idea. *Crypto Research*, 236 F.Supp.3d at 682. Determining that the patents-in-suit were likened to a technique that solved a storage and

computation issue, the court also advised against the "overgeneraliz[ation] [of] claims," lest, if done in the extreme, "'makes all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious.'" *Id*. (quoting *Diamond v. Diehr*, 450 U.S. 175, 189 n. 12 (1981)).

In this case, Mr. Rady's invention is directed to a device and method for recording a series of unique identifiers, or signatures, of physical items – *e.g.*, gemstones – to a blockchain. The network node utilized is comprised of processing devices, storage devices, a communication subsystem, and a variety of item analysis components. '250 patent at 1:32-40. As detailed above, the invention claimed in the '250 patent does not merely process data to provide an exclusive signature for an asset; rather, the invention claimed configures item analysis components to measure physical features comprising of any anomalies, defects, imperfections, noise and geometric irregularities that are either naturally occurring or human made through a process to produce a unique identifier for each separate asset. *Id*. at 3:60-4:3; 19:15-51 (Claim 1); 20:51-21:9 (Claim 12); and 22:6-54 (Claim 22).[9] Moreover, the invention of the '250 patent claims do not merely store a unique identifier on a blockchain; instead, the claimed invention provides logged reputational data to the peer-to-peer network, representing a recordation of the instance of the physical item, and configured to provide proof of identity data to the peer-to-peer network, all of which is maintained and provided for use in accordance with a Blockchain Authentication and Trust Module (BATM) framework, also implemented by the peer-to-peer network. *Id*. at 2:14-22;

[9] Claims 1, 12 and 22 of the '250 patent are the only independent claims, and thus, each of the elements included in those claims, including items analysis components to determine unique signatures of each item and recording that signature on the blockchain, are included in each of the '250 patent's twenty-three (23) claims. The dependent claims claim further limitations, such as spectral imagers to assess the spectral hypercube data of the physical items, light sources to provide broad spectrum illumination, range scanners, HD photography cameras, and scales , that claim further details regarding Mr. Rady's novel invention. *See, e.g*., '250 patent at 19:52-67 (Claim 2); 21:10-24 (Claim 13).

19:15-51 (Claim 1); 20:51-21:9 (Claim 12); and 22:6-54 (Claim 22). Additionally, the nodes could be configured to provide proof of location, privacy, trust and authentication of the physical item. *Id*. at 2:23-25.

The invention claimed in the '250 patent solves the issue of authentication in computerized asset administration, and uses Blockchain as a gateway for a variety of solutions to provide transparency in asset and supply chain management. Until Mr. Rady's invention, blockchain had only been applicable to digital assets with some limited success to physical assets. *Id*. at 1:54–56. The claimed invention requires complex and specialized hardware to assess the properties of the asset, without the need for a central authority or an intermediary. *Id*. at 1:12-13. Additionally, the invention claimed in the '250 patent resolves concerns regarding modifications of the physical item, employing the imperfections, anomalies, and defects found in gemstones to determine their unique properties to define a unique signature. These "technologically complex" methods do not simply invoke a computer as a tool to manage asset authentication, but advance the operations of a computer as a processing device. *Core Wireless Licensing*, 880 F.3d at 1363.

Likewise, the claimed invention is an innovative and valuable system for solving the very difficult, and previously unsolved problem of how to establish, track and maintain the provenance of physical items. While defendants would have this Court believe that tracking physical items would make the claims abstract, the *Thales* court determined that claims directed to a new and useful technique for using sensors to more efficiently track an object on a moving platform was patent-eligible subject matter. *Thales Visionix Inc*., 850 F.3d at 1349. Therefore, the "basic thrust" of the claim is not directed to excluded subject matter prohibited under § 101. *Enfish*, 822 F.3d at 1335-36. Since the claims would clear step one of the *Alice* two-prong test, the Court need not

apply step two of the analysis, and De Beers' Motion to Dismiss can be denied. *See Ancora Techs*, 908 F.3d at 1349.

ii. Mr. Rady's Claims Satisfy Step Two of the Alice 2-Step Inquiry.

Even if the Court finds that the '250 patent does simply claim an abstract idea, step two of the *Alice* test is nonetheless satisfied given that consideration of the elements of the claims, independently and in ordered combination, would lead to a finding that the invention claimed therein constitutes an "inventive concept." *Alice*, 134 S. Ct. at 2357.

In *Alice*, the Court held that "[a] claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize [an abstract idea].'" *Id*. (quoting *Mayo*, 132 S. Ct., at 1297). The Court in *Mayo* made clear that "to transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words 'apply it.'" *Mayo*, 132 S. Ct., at 1294. Subsequent courts have expanded on step two, noting that the inventive concept "must be more than well-understood, routine, conventional activity," *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1262 (Fed. Cir. 2016), "and cannot simply be an instruction to implement or apply the abstract idea on a computer." *BASCOM*, 827 F.3d at 1349. Yet still, "an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces." *Id*. at 1350.

Against this background, the Federal Circuit has found an "inventive concept" in a host of cases. For instance, in *DDR Holdings*, the Court held that the claims at issue which resolved an "internet-centric problem" amounted to an "inventive concept" since they were "directed to systems and methods of generating a composite web page that combines certain visual elements of a 'host' website with content of a third-party merchant," that which would normally "lure …

visitor traffic away from a host website." *DDR Holdings*, 773 F.3d at 1248. The court supported its holding by finding that the claims "specif[ied] how interactions with the Internet are manipulated to yield a desired result" such that the interactions are "not merely the routine or conventional use of the Internet." *Id.* at 1259.

As another example, in *BASCOM*, the Federal Circuit found that a "patent claiming a method and system for filtering Internet content, [and] providing customized filters at a remote server" also amounted to an inventive concept due to the "installation of a filtering tool at a specific location, remote from the end-users, with customizable filtering features specific to each end user." *BASCOM*, 827 F.3d at 1350. In holding that the reliance on an abstract idea nevertheless arose to an inventive concept, the court concluded that:

> The claims do not merely recite the abstract idea of filtering content along with the requirement to perform it on the Internet, or to perform it on a set of generic computer components. Such claims would not contain an inventive concept. Nor do the claims preempt all ways of filtering content on the Internet; rather, they recite a specific, discrete implementation of the abstract idea of filtering content.

BASCOM, 827 F.3d at 1350 (internal citations and quotations omitted). Here, the claims of the '250 patent are not directed to the idea of applying the abstract ideas of collecting, processing and storing data. Rather, the claims are directed to the inventive combination of multiple devices to determine unique signatures for physical items, storing those signatures on the Blockchain, and then comparing signatures to those already stored on the Blockchain for the purpose of authenticating the provenance of those items.

It is clear "[i]nventive concept" does not mean "novelty;" "[t]he mere fact that something is disclosed in a piece of prior art, for example, does not mean it was well-understood, routine, and conventional." *Berkheimer*, 881 F.3d at 1369. Yet, "[o[ther precedent illustrates that pragmatic analysis of § 101 is facilitated by considerations analogous to those of §§ 102 and 103

as applied to the particular case." *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1347 (Fed. Cir. 2015). Among these considerations are: (i) the commercial success of the invention; (ii) the long-felt but unsolved need to solve the problem addressed by the invention; and (iii) the failure of others to solve the problem. *See Graham v. John Deere Co. of Kansas City*, 86 S. Ct. 684, 694 (1966). *See also DDR Holdings*, 773 F.3d at 1248, *BASCOM*, and 827 F.3d at 1351 (for discussion of claims that resolved an "existing problem" in the applicable industry of which the patent operated.).

As BCG itself has conceded, TRACR was created to address long-standing issues and provide benefits within the diamond industry; namely, authenticating a diamond's natural creation, provenance, and ethical sourcing, and tracking it through the worldwide distribution chain. This further supports the conclusion that the invention claimed in the '250 patent is inventive, and thus claim patent eligible subject matter under § 101.[10]

[10] While not included in the Second Amended Complaint, Mr. Rady recently discovered a De Beers publication dated June 2020, wherein Neil Ventura, Executive Vice-President, Strategy and Innovation, for De Beers Group, states: " we also continue to invest in initiatives such as Tracr – arguably our most ambitious undertaking, as it combines a number of different technologies - all enabled by connectivity – to provide a digital solution that can address provenance, traceability and authenticity challenges, enhancing trust for all industry participants.…My first call to action relates to Tracr. We have kick started the development of a great platform combining cutting edge technologies that can help fast track the industry into the digital age at scale, with a particular focus on provenance, traceability and authenticity. *This is a journey that is new to us and is new to the industry….*" (Emphasis added). A copy of this publication is attached hereto, and incorporated herein, as ***Exhibit A***.

Moreover, just last week, on October 28, 2020, Tracr was awarded the 2020 JNA Award for Industry Innovation of the Year. The JNA awards are the most prestigious award program in the global jewelry and gemstone industry, and recognize best practices in the jewelry and gemstone community by recognizing and promoting companies and individuals that demonstrate outstanding leadership, innovative thinking, and sustainable and socially responsible strategies. A copy of De Beers' announcement of this award is attached hereto, and incorporated herein, as ***Exhibit B***.

Moreover, as found by the Patent Office by virtue of its issuance of the '250 patent, the invention claimed therein is novel and inventive. Because factual determinations need to be made, the Court's granting of a motion to dismiss would be premature. *See e.g. Aatrix Software, Inc.*, 882 F.3d at 1125 (While "patent eligibility can be determined at the Rule 12(b)(6) stage ... [t]his is only true when there are no factual allegations that ... prevent resolving the eligibility question as a matter of law."); *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1097 (Fed. Cir. 2016) ("[P]lausible factual allegations may preclude dismissing a case under § 101 where, for example, nothing on th[e] record … refutes those allegations as a matter of law justifies dismissal under Rule 12(b)(6) (internal quotations omitted); *Data Distrib. Techs., LLC v. BRER Affiliates, Inc.*, No. 12- 4878, 2014 WL 4162765, *11-12 (D.N.J. Aug. 19, 2014) ("whether the [] patent satisfies step two of the *Alice* analysis" is a "difficult issue, and the one that the Court cannot fully address …" at the motion to dismiss stage); *Nomadix, Inc. v. Hospitality Core Servs. LLC*, No. 14-08256, Dkt. 47 at 4 (C.D. Cal. Apr. 3, 2015) (because patents are presumed to be valid and "the exact functioning of the patented systems has not yet been fully briefed," the court denied the motion to dismiss); *Dynamic Applet Technologies, LLC v. Mattress Firm, Inc., No. 4-17-cv-00860 at *21 (E.D. Tex. Aug. 29, 2018)* (dismissed motion to dismiss based on *Alice*).

Here, Mr. Rady alleges that his invention claimed in the '250 patent is inventive, solving a complicated and long standing problem plaguing many industries. Therefore, at the very least, the Court should permit discovery to have a more developed factual context for which the Court might consider whether the '250 patent constitutes unpatentable subject matter, "lest" patent law be "swallowed" by the "exclusionary principle" of unpatentable subject matter. *Alice*, 134 S. Ct. at 2354.

CONCLUSION

The well-pled allegations of the Amended Complaint plainly establish as a matter of law that the '250 patent does not merely claim an abstract idea ineligible of patent protection under 35 U.S.C. § 101, or in the alternative, meets the abstract idea exception as an inventive concept whose elements transforms the nature of the claim into a patent-eligible application. *See Alice*, 134 S. Ct. at 2355. Additionally, since factual determinations need to be made, granting the motion to dismiss would be premature and potentially foreclose the opportunity to demonstrate the '250 patent's inventiveness. As such, Plaintiff Max A. Rady respectfully requests that the Court enter an order denying the Motion to Dismiss filed by Defendant De Beers UK Limited, and granting such other and further relief as the Court deems proper.

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WHITEFORD, TAYLOR & PRESTON L.L.P

By: */s/ Kenneth M. Lewis*
Kenneth M. Lewis

444 Madison Avenue, Fourth Floor
New York, NY 10022
(914) 761-8400
klewis@wtplaw.com

WHITEFORD, TAYLOR & PRESTON L.L.P.
Seven Saint Paul Street, Suite 1500
Baltimore, MD 21202-1636
(410) 347-8700
stiller@wtplaw.com
khroblak@wtplaw.com
Steven E. Tiller
Kevin G. Hroblak

Attorneys for Plaintiff,
Max A. Rady

CERTIFICATE OF SERVICE

I hereby certify that on November 2, 2020, a true and correct copy of the foregoing document is being filed and served via Electronic Case Filing (ECF) on all counsel of record who have consented to electronic service, and served via electronic mail on all counsel listed below:

Kyle W.K. Mooney
Morrison & Foerster LLP
250 West 55th Street
New York, New York 10019
kmooney@mofo.com

and

Michael A. Jacobs
Morrison & Foerster LLP
425 Market Street
San Francisco, California 94105
mjacobs@mofo.com

Counsel for Defendant
THE BOSTON CONSULTING GROUP, INC.

Christopher P. Borello
Joshua D. Calabro
Venable LLP
127 Avenue of the Americas
New York, New York 10020
cborello@Venable.com
jdcalabro@Venable.com

Counsel for Defendant
De BEERS UK LIMITED

Dated: November 2, 2020

/s/ Kenneth M. Lewis
Kenneth M. Lewis